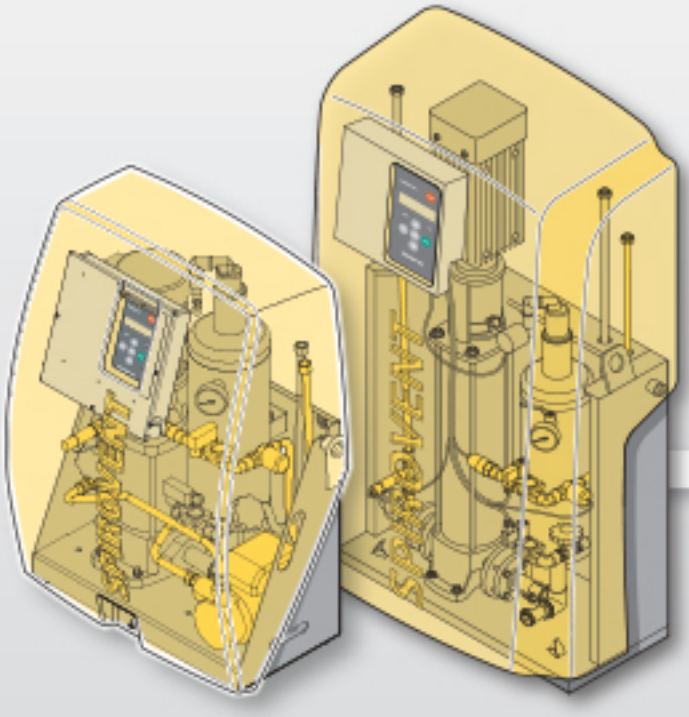
SPIROTECH
FOR BETTER PERFORMANCE



User Manual 03

SpiroVent Superior
S6/S10/S16

60_465_01

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1 PREFACE

This user manual describes the installation, commissioning and operation of the SpiroVent Superior, types:

Type	Article code
- S6A	MA06A..
- S6A-R	MA06R..
- S6A-R 2P	MA06P..
- S10A	MA10A..
- S10A-R	MA10R..
- S16A	MA16A..
- S16A-R	MA16R..

Read the instructions before installation, commissioning and operation. Keep the instructions for future reference.

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This manual has been composed with the utmost care. Should, however, this manual contain any inaccuracies, Spirotech bv cannot be held responsible for this.

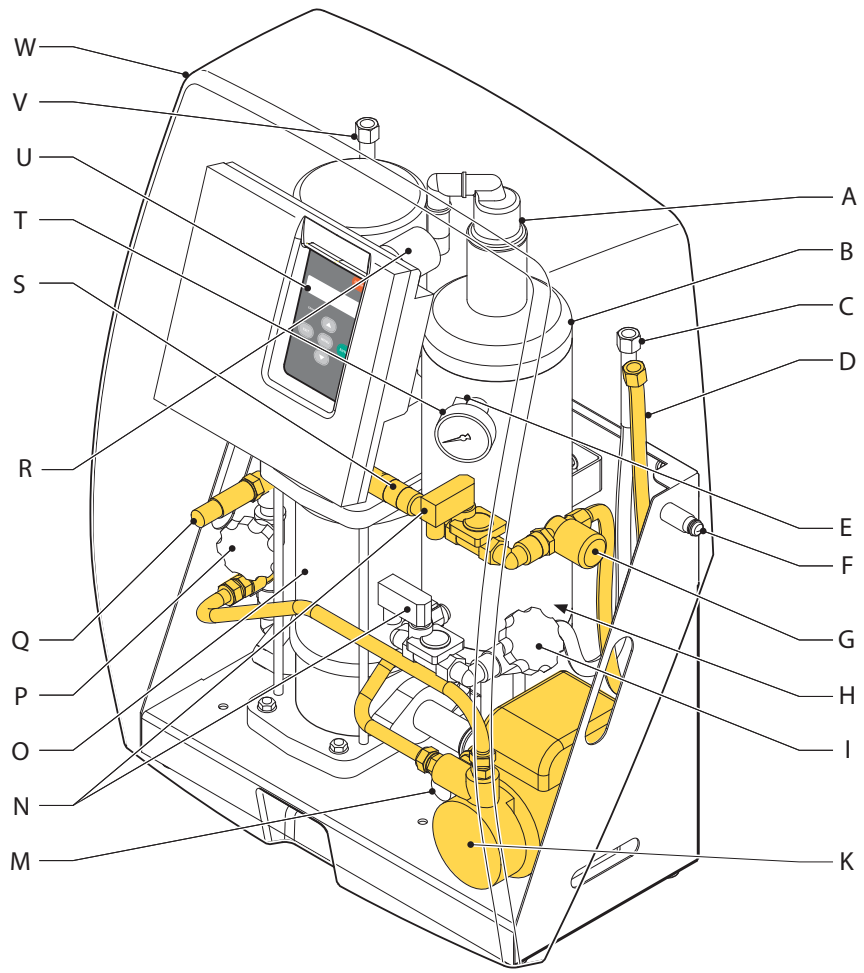
1.1 Symbols

Throughout the instructions the following symbols are used:

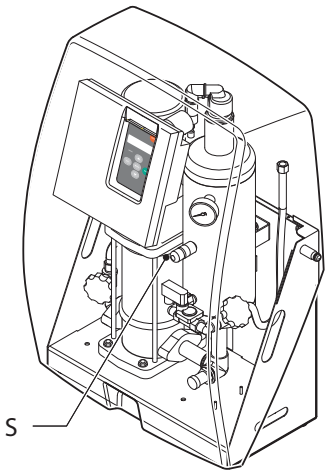
	Warning or important note
	Note
	Risk of electric shock
	Risk of burning

2 INTRODUCTION

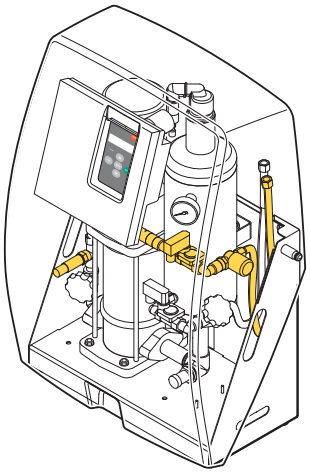
2.1 Overview of the unit (S6)



Superior S6A-R 2P



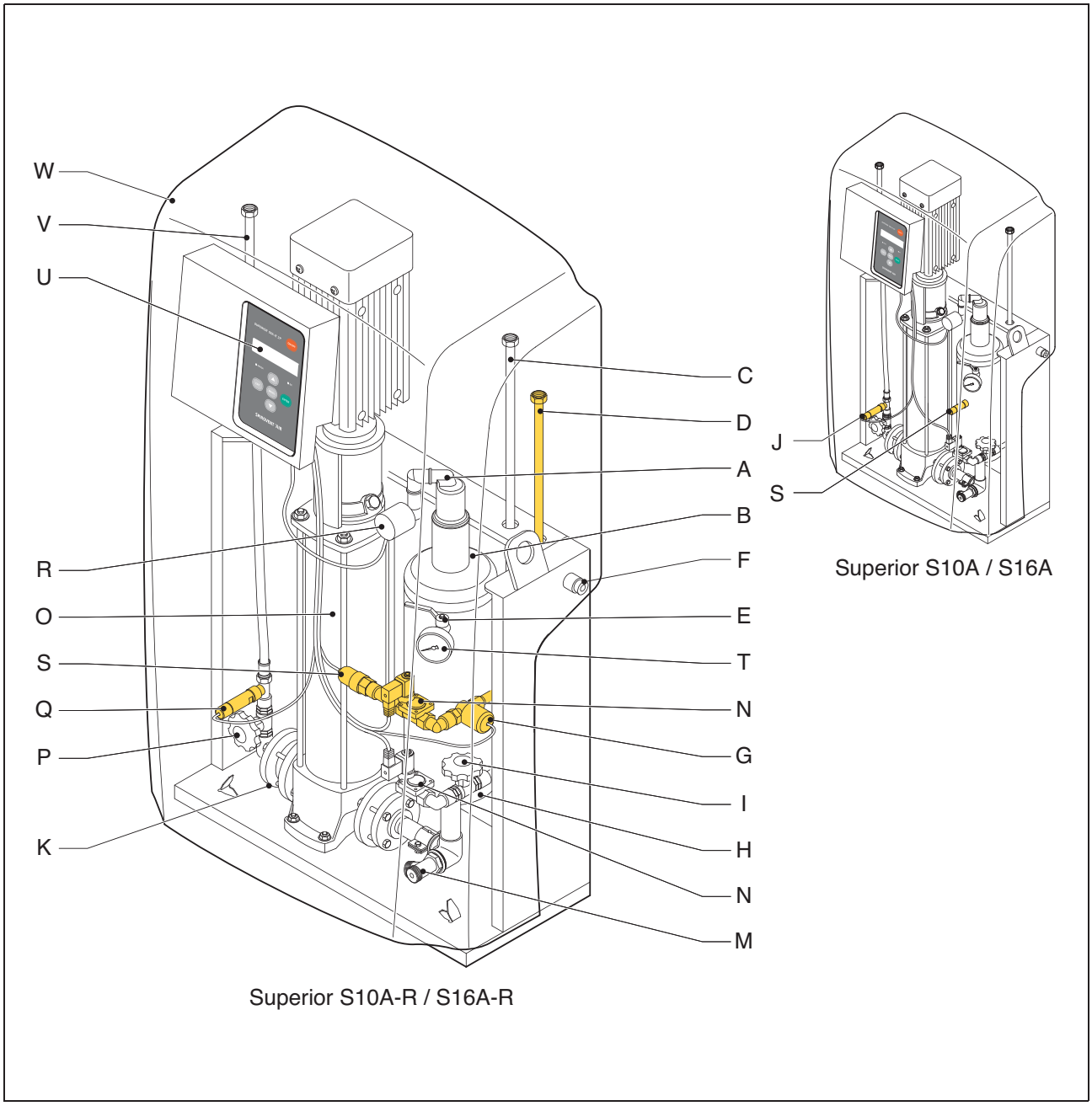
Superior S6A



Superior S6A-R

A	Automatic air vent
B	Deaeration vessel
C	Inlet line
D	Refill connection (types S6A-R and S6A-R 2P)
E	Valve (before pressure gauge)
F	Bolts
G	Water flow meter
H	Level switch (in bottom of vessel)
I	Adjustment valve inlet
K	Back-up pump (for type S6A-R 2P)
M	Drain connection (under the vessel)
N	Solenoid valve
O	Pump
P	Adjustment valve outlet
Q	Pressure sensor
R	SmartSwitch
S	Pressure switch
T	Pressure gauge
U	Control unit
V	Outlet line
W	Cover

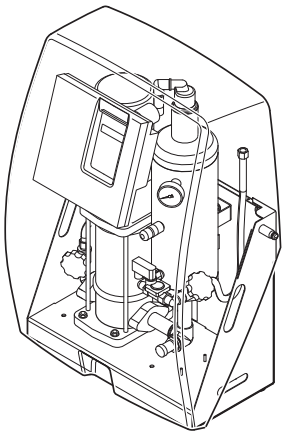
2.2 Overview of the unit (S10 and S16)



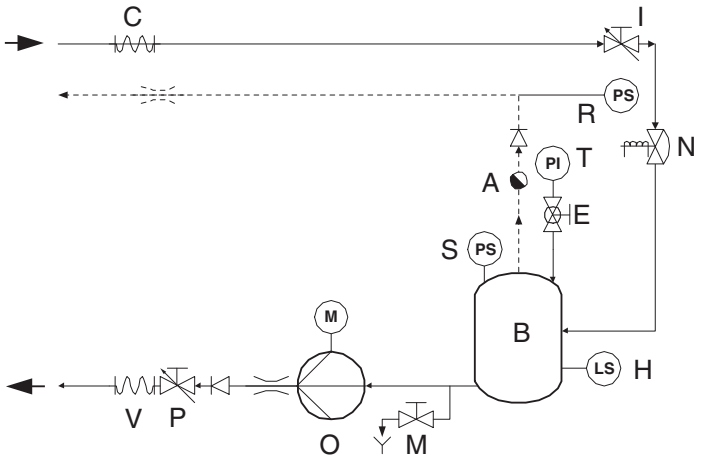
A Automatic air vent
B Deaeration vessel
C Inlet line
D Refill connection (S10A-R and S16A-R)
E Valve (before pressure gauge)
F Bolts
G Water flow meter
H Level switch (in bottom of vessel)
I Adjustment valve inlet
J Pressure switch discharge outlet (S10A and S16A)
K Flow-back limiter
M Drain connection
N Solenoid valve
O Pump
P Adjustment valve outlet
Q Pressure sensor (S10A-R and S16A-R)
R SmartSwitch
S Pressure switch
T Pressure gauge
U Control unit
V Outlet line
W Cover

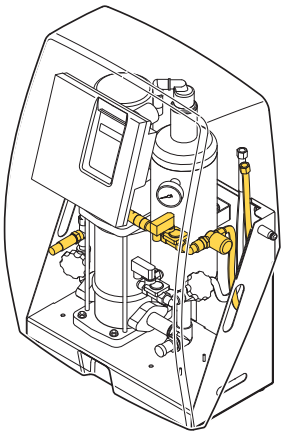
2.3 Operation

The figures below schematically show the operation of the unit. The letter indications correspond with the main figure on the previous pages.

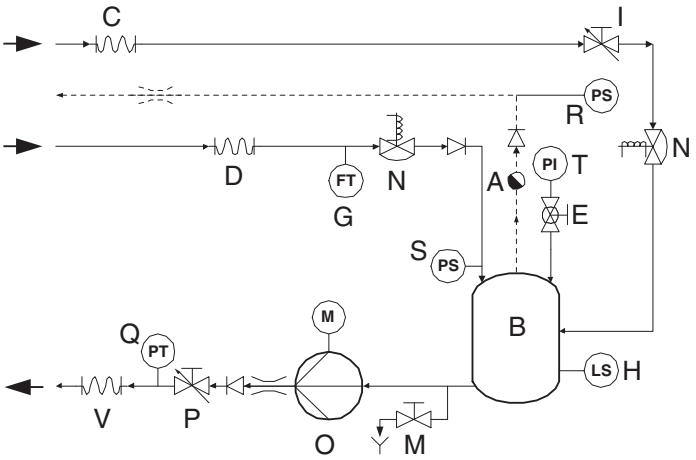


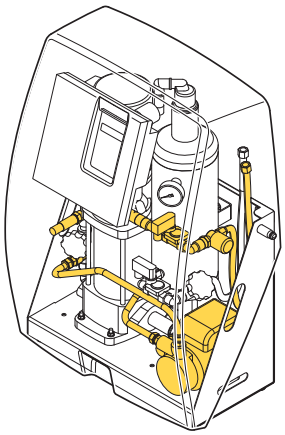
S6A



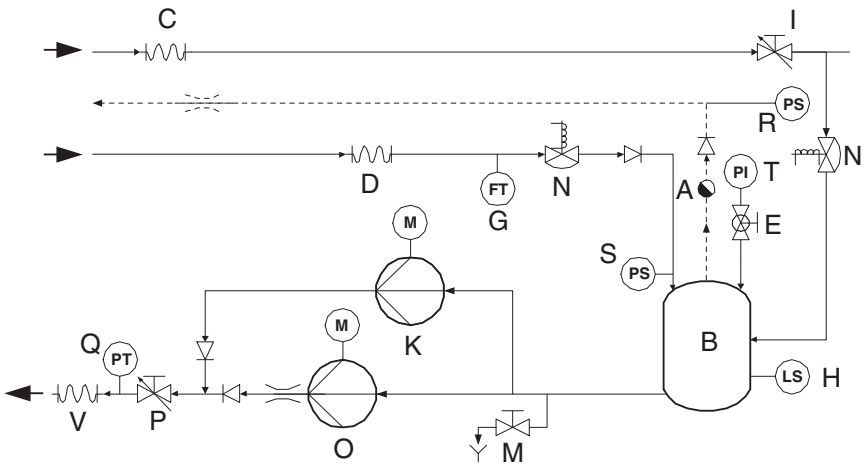


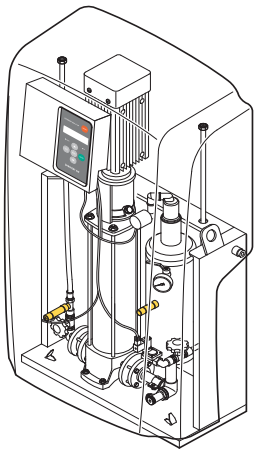
S6A-R



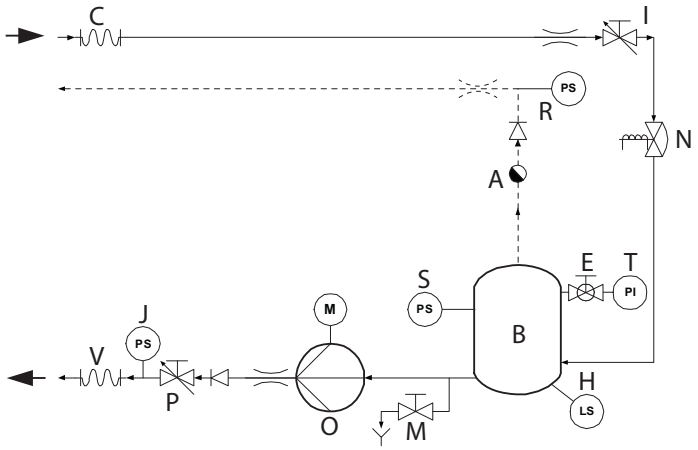


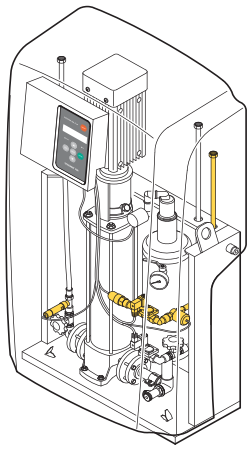
S6A-R 2P



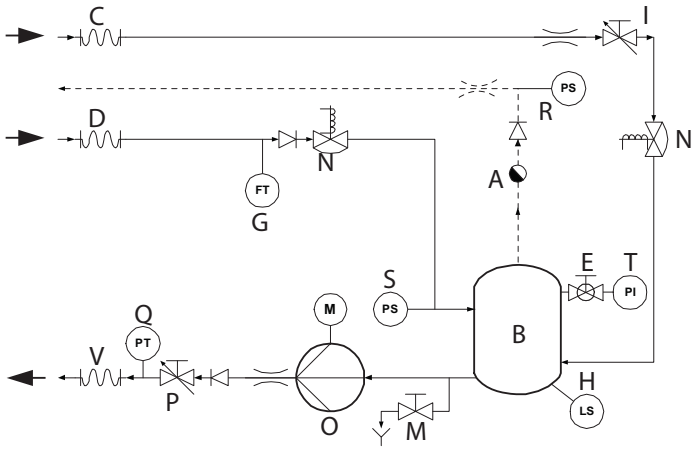


Superior S10A/ Superior S16A





Superior S10A-R / Superior S16A-R



2.3.1 General

The SpiroVent Superior is a fully automatic vacuum degasser for installations filled with fluid. Fluids contain dissolved and free gases. The unit removes these gases from the installation. Problems caused by gases in the installation are thus prevented.

2.3.2 Degassing

The unit starts up a degassing process each day at a time set by the user. The process has two phases:

1 The rinsing phase: The fluid flows from the installation through the solenoid valve (N) into the vessel (B). The pump (O) continuously pumps the fluid from the vessel into the installation. Here the fluid absorbs gases present in the installation.

2 The vacuum phase: The solenoid valve (N) regularly closes, starting a vacuum phase. The continuously running pump (O) provides underpressure in the vessel (B). The underpressure causes the release of the gases dissolved in the fluid, which are collected at the top of the vessel. The gases are removed from the installation through the automatic air vent (A). The SmartSwitch (R) at the automatic air vent makes sure that the degassing is stopped as soon as the content of dissolved gases has reached the minimum level. The solenoid valve (N) opens again, at the end of the vacuum phase.

2.3.3 (Re)filling

The SpiroVent Superior *S6A-R*, *S6A-R 2P*, *S10A-R* and *S16A-R* have an integrated refill function.

A unit with a refill function can control the pressure of the installation. To control the pressure, the unit inserts additional degassed fluid into the installation, if necessary. The unit can also fill the entire installation with degassed fluid.

2.3.4 Back-up pump

The SpiroVent *S6A-R 2P* also has a back-up pump. In case of a break-down of the main pump, the back-up pump takes over the refill function of the main pump, without degassing.

2.4 Operating conditions

The unit is suitable for use in systems filled with clean water or mixtures of water with a maximum of 40% glycol. Use in combination with other fluids may result in irreparable damage.

The unit should be used within the limits of the technical specifications as given in chapter 3.

WARNING

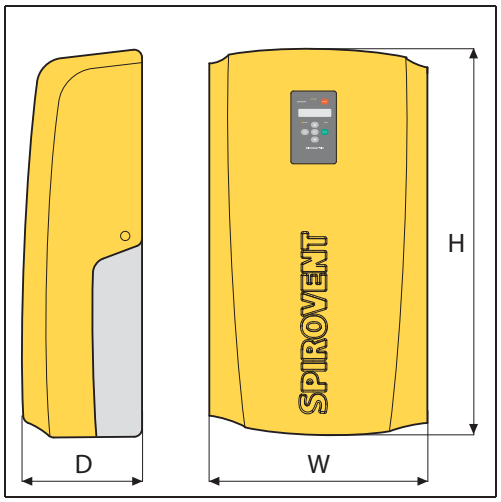
- In case of doubt, always contact the supplier.
- In case of a heavily contaminated system fluid, install a dirt separator or filter in the main return line of the installation.

2.5 Scope of delivery

- 1x SpiroVent Superior
- 1x User manual
- 1x Non-return protection (optional)

3 TECHNICAL SPECIFICATIONS

3.1 Dimensions



Model	Height [mm]	Width [mm]	Depth [mm]
S6	880	590	350
S10/S16	1272	744	400

3.2 General specifications

General specicfications		S6A	S6A-R	S6A-R 2P	S10A	S16A	S10A-R	S16A-R
Max. system volume	m^3	300						
Empty weight	kg	58	59	68	80	90	82	92
Noise level	dB(A)	<70 (57)						
Volume of degassing vessel	L	8						
Inlet connection		Swivel G¾" f.t.						
Outlet connection		Swivel G¾" f.t.						
Refill connection		n/a	Swivel G¾" f.t.		n/a		Swivel G¾" f.t.	
Drain connection		Swivel G¾" m.t.						

3.3 Electrical specifications

Electrical specicfications		S6A	S6A-R	S6A-R 2P	S10A	S16A	S10A-R	S16A-R
Supply voltage	-	230 V ± 10% / 50 or 60 Hz			3 × 400V ±10% 50Hz (60Hz upon request)			
Absorbed power	W	1150	1150	1650	1550	2250	1550	2250
Nominal power consumption	A	5,9	5,9	7,9	3,0	4,3	3,0	4,3
Protection	A(T)	10/3,5						
Max. load of potential-free contacts	-	24V/1A						
Supply voltage for BMS control (voltage of BMS)	Vac	24 (to be supplied)						
Supply voltage of external refill signal (supplied voltage)	Vdc	n/a	5 (suplied)		n/a		5 (suplied)	
Protection class	-	IP x4D						

3.4 Other specifications

Other specicfications		S6A	S6A-R	S6A-R 2P	S10A	S16A	S10A-R	S16A-R
System pressure	bar	1..6			5..10	9..16	5..10	9..16
Ambient temperature	°C	0..40						
System fluid temperature	°C	0..90						
Maximum compression pressure (with closed valve behind pressure gauge)	bar	10			16	25	16	25
Refill flow	l/hr	n/a	See graph in § 6.1		n/a		See graph in § 6.1	
Refill pressure	bar	n/a	0..6		n/a		0..10	
Refill fluid temperature	°C	n/a	0..70		n/a		0..70	

3.5 Building Management System (BMS)

The unit is provided with auxiliary contacts for communication with a BMS or other external system. The BMS must offer a 24Vac voltage.

CAUTION

- The unit failure signal must not be used as a boiler interlock.

Signal	S6A	S6A-R	S6A-R 2P	S10A	S16A	S10A-R	S16A-R
Unit in operation	Potential-free						
Unit failure	Potential-free						
Unit release/ stop	24 V_{ac}						
Refill by BMS	n/a	24 V_{ac}	24 V_{ac}	n/a	n/a	24 V_{ac}	24 V_{ac}

4 SAFETY

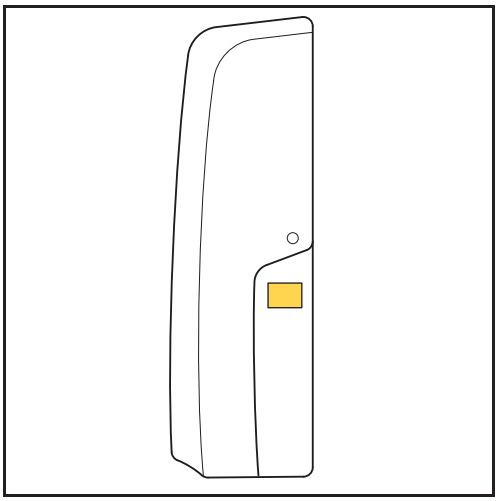
4.1 General precautions

WARNING

- Installation and maintenance of the unit should only be carried out by qualified personnel.
- Remove the power and pressure from the unit before starting the activities.

WARNING

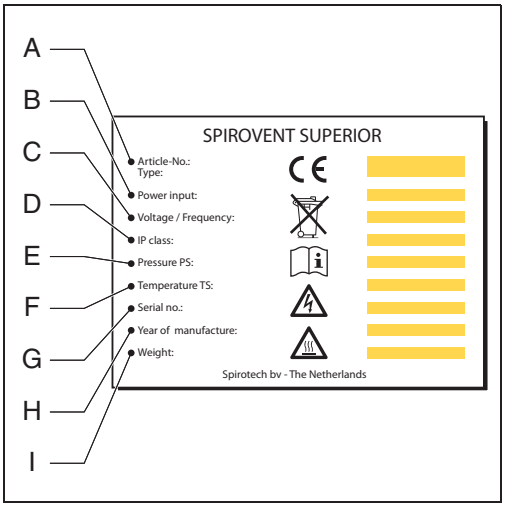
- There are hot parts under the cover. Let the unit cool down before starting the activities.



4.2 CE marking

The unit has a CE marking. This means that the unit has been designed, constructed and tested in compliance with the current safety and health regulations.
Provided that the user manual is adhered to, the unit can be safely used and maintained.

4.3 Type plate



A Type of the unit
B Absorbed power
C Supply voltage
D Protection class
E System pressure
F System temperature
G Serial number
H Year of construction
I Weight

The type plate can be found on the right side of the unit.

5 INSTALLATION AND COMMISSIONING

5.1 Installation conditions

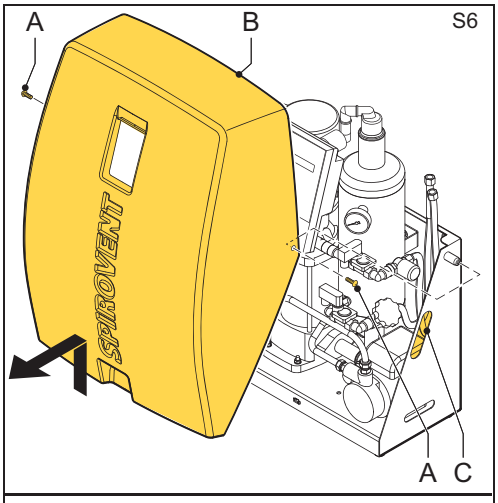
- Install the unit on a frost-free, well-ventilated place.
- Type:
  - S6: Connect the unit to a 230 V / 50-60 Hz power supply.
  - S10 and S16: Connect the unit to a 3 x 400 V / 50-60 Hz power supply.

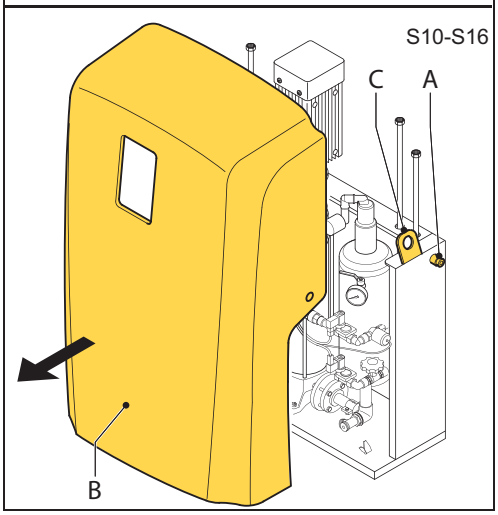
- Make sure that the expansion system has the proper dimensions. The water displacement in the unit can cause pressure variations in the installation. Take into account an extra net expansion volume of at least 8 litres.

5.2 Unpack

WARNING
To prevent damage to the unit, do not hoist the unpacked unit.

The unit is delivered on a pallet.





1. Remove the packaging.
2. Loosen the screws (A).
3. Remove the cover (B) from the unit.
4. Move the unit to its place of installation.

- S6: Move the unit with two persons. Use the handles (C) to lift the unit.
- S10 and S16: Move the unit with proper lifting / hoisting equipement. Use the hoisting eyes (C) to lift the unit.

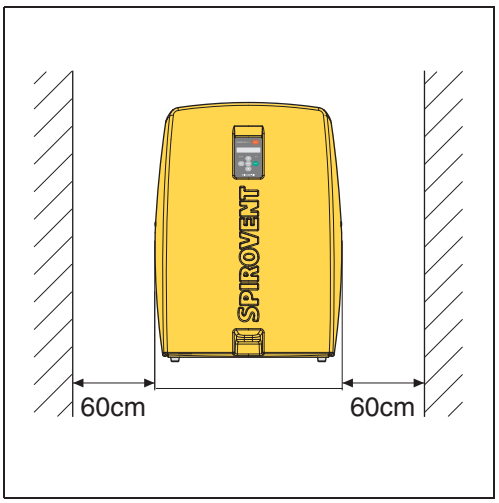
5.3 Installation and mounting

CAUTION

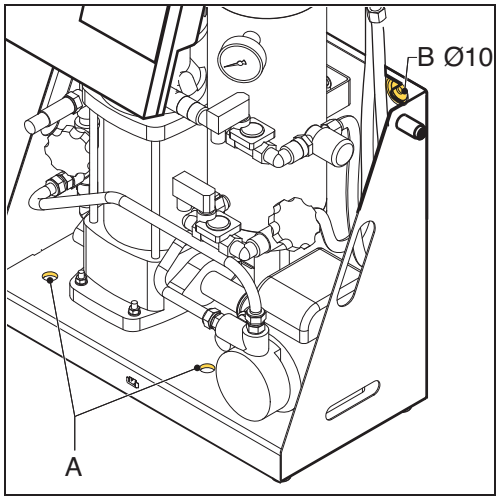
- Install the unit in accordance with the local guidelines and rules.
- Install the unit as bypass to a main line of the installation.
- Preferably install the unit as close as possible to the expansion system.

NOTE

- Preferably install the unit at the point in the installation with the lowest temperature. Here the most dissolved gases are found in the fluid.
- Install the unit close to the expansion system to minimise pressure fluctuations caused by the intake of water by the system.
- Make sure that the operating panel is always easily accessible.
- Make sure that you maintain at least the distance for service and repair as indicated.



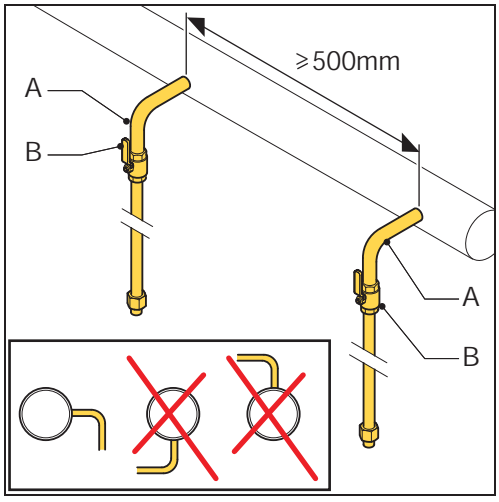
5.3.1 Mounting



1. **Wall mounting (only for S6)**: Mount the unit on the wall by using the holes (B). Make sure that the mounting can support the filled unit (empty weight ± 10 kg).
2. **Floor mounting**: Place the unit on a flat surface, against a flat, closed wall. Mount the unit on the floor by using the holes (A) (S6:∅10, S10/S16: ∅11).

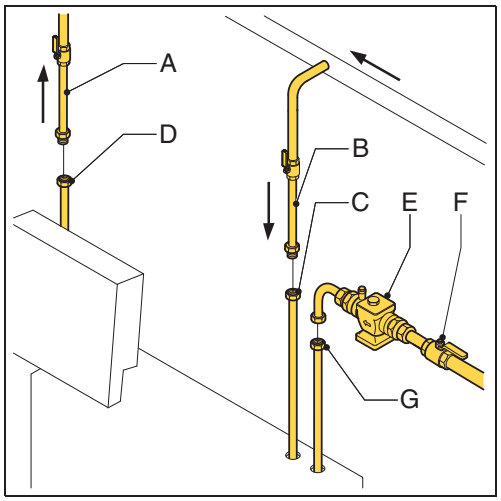
5.3.2 Installation

Mechanical



1. Make two branch lines ¾" (A) on the side of the main transport line. The distance between them should be at least 500 mm.
2. Insert a valve (B) in each branch. With these valves the unit can be isolated.

CAUTION
Make sure that the valves are opened before putting the unit into operation.



NOTE
As seen from the direction of the volume flow, the first branch is the inlet of the unit.

3. Connect the line (A) to the flexible outlet line (D).
4. Connect the line (B) to the flexible inlet line (C).

Only applicable to units with the refill functionality:

1. Insert a valve (F) and a backflow protection (E) in the refill fluid supply line.

CAUTION

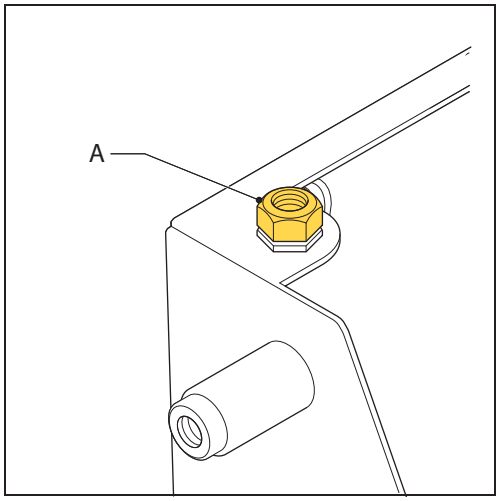
- Use a locally approved backflow protection. A backflow protection can also be supplied as an option with the unit.
- Make sure that the pressure of the feedwater is below the system pressure. This prevents undesired refilling.
- Make sure that the lines leave the unit at the rear.

2. Connect the make up water to the refill connection (G) of the unit.

Electrical

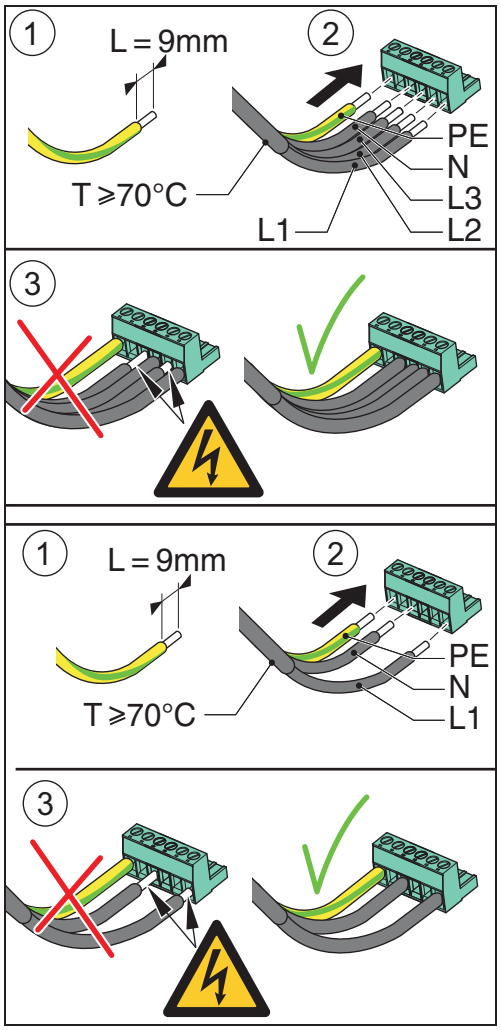
CAUTION

- Preferably use a wall socket for the power supply to the unit. The socket should remain accessible.
- Mount an all-pole main switch (contact opening >= 3mm) if the unit is directly connected to the power supply.
- Use supply cables with the correct dimensions.
- Always replace a defective fuse with a fuse of the same value, see § 3.3.

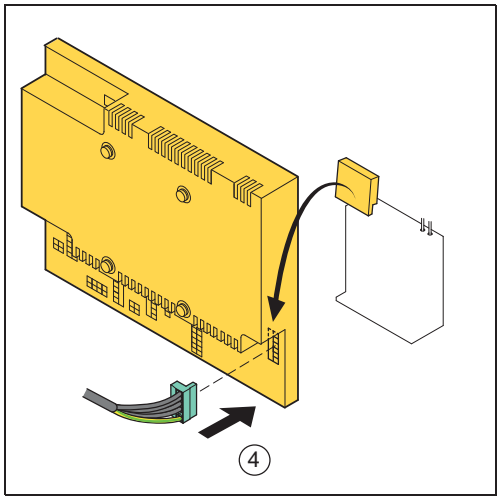


1. S6: Feed a 3-core supply cable through swivel (A).

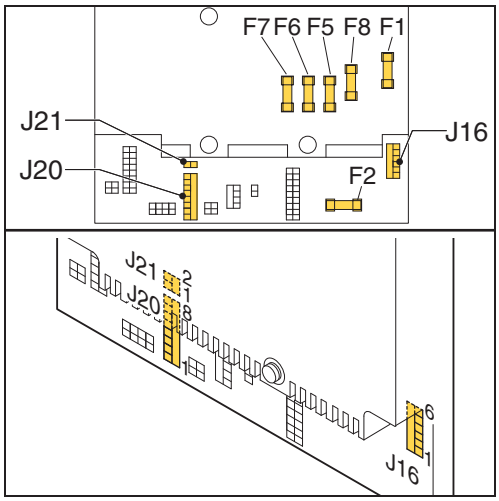
   S10 and S16: Feed a 5-core supply cable through the swivel (A).



2. Insert the wires as indicated into the connector.



3. Insert the connector into receptable J16.



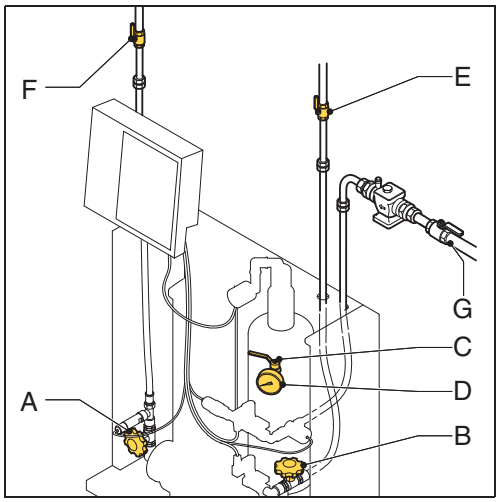
4. If a BMS or other external system is used, use connector J20 to connect to that device.
5. Only applicable to units with the refill functionality: If another external device controls the refill, use connector J21 to connect to that device.

connector	contact	connection
J20	1 and 2	Unit ready
	3 and 4	Failure
	5 and 6	On/off
	7 and 8	Refill[1)]
J21	1 and 2	Refill[1)]

1) only applicable to units with the refill functionality.

5.4 Commissioning

5.4.1 Preparation



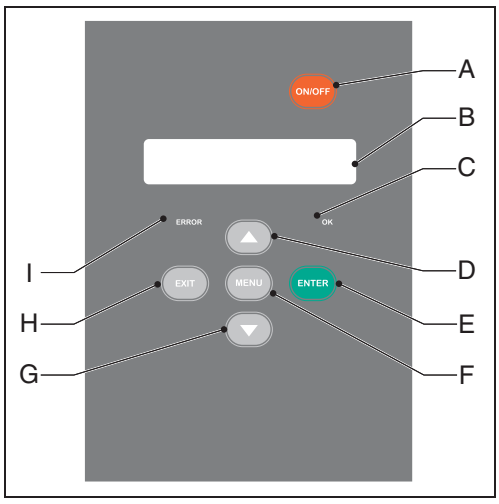
1. Close the valves (E and F) in the inlet and outlet lines.
2. Set the adjustment valves from the position “fully open” as specified in the table.
3. Open the valve (C) before the pressure gauge (D).
4. Open the valves (E and F) in the inlet and outlet lines.
5. Only applicable to units with the refill functionality: Open the valve (G) in the refill line.

NOTE
The pressure in the vessel during the flushing phase should increase from vacuum up to overpressure within 10 seconds. If it takes longer, turn the adjustment valve (B) fully open and then back to a position¼ higher than the actual position.

product type	system pressure [bar]	inlet (B)[1)]	outlet (A)
S6	1..2	3	2
	2..3	2½	2½
	3..4	2¼	6
	4..5	2	6
	5..6	1¾	6
S10	5..6	6	1¾
	6..7	3¼	1¾
	7..8	3	1¾
	8..9	3	2½
	9..10	¾	6
S16	9..10	6	1½
	10..11	3	1½
	11..12	3	1½
	12..13	2¾	1½
	13..14	2¾	1½
	14..15	2½	1½
	15..16	2½	1¾

1) In case of water-glycol mixtures, foaming may occur dependent on glycol quality, system pressure, gas content and glycol rate. This may lead to malfunction of the superior. Open the inlet valve to max 6 to resolve this (temporary) error.

5.4.2 Start up



A On/off
B Display
C Status report in operation / OK (green LED)
D Up
E Confirm / Enter
F Menu
G Down
H Cancel / Exit
I Status report failure (red LED)

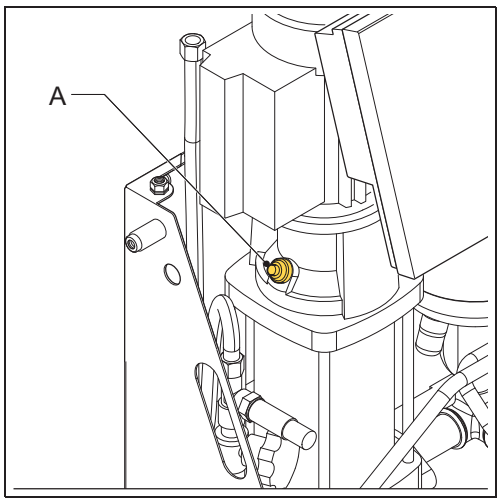
CAUTION

- The start-up routine starts automatically when the unit is switched on for the first time.
- Press EXIT to go back one step in the menu while programming.

Set date and time

1. Press ON/OFF.
2. Select a language using ▲ and ▼. Press ENTER.
3. Set the date using ▲ and ▼. Press ENTER.
4. Set the day using ▲ and ▼. Press ENTER.
5. Set the time using ▲ and ▼. Press ENTER.

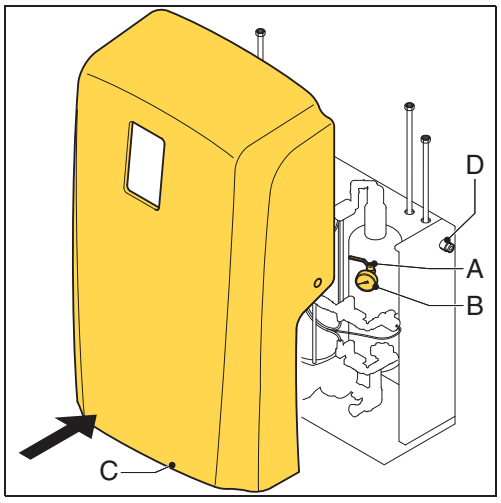
5.4.3 Filling the unit



1. See § 5.4.1 for the settings of the valves.
2. Press ENTER two times. The unit starts filling.
3. Wait for 20 seconds until `Initial fill busy` disappears.
4. Loosen the air vent screw (A) a few turns and tighten it again when air has stopped coming out.
5. Repeat steps 1 - 3 until water starts coming out of the air vent screw at step 3.
6. Also deaerate the back-up pump with type S6A-R 2.
7. Press EXIT two times. The status menu shows the message `Err 7` when the test of the run dry protection has been completed successfully.
8. Press MENU. Select `Manual operation` using ▲ and ▼. Press ENTER.
9. Select `Reset` using ▲ and ▼. Press ENTER.

NOTE
When the green LED is lit this indicates that the unit is ready for use. Degassing starts by default every day at 08:00 hours.

5.4.4 Check operation



1. Manually start the unit, see § 5.5.2.

2. Check the indication of the pressure gauge (B). This should alternately display overpressure and underpressure.
3. Close the valve (A) before the pressure gauge (B).
4. Put back the cover (C) on the unit and fasten it with the bolts (D).

NOTE
The SmartSwitch will automatically turn off the unit when the concentration of dissolved gases has reached the minimum level.

5.5 Install and operate

5.5.1 Set the user parameters

1. Press MENU. Select `Settings` using ▲ and ▼. Press ENTER.
2. Select the parameter to be changed using ▲ and ▼. Press ENTER.
3. Change the setting using ▲ and ▼. Press ENTER.
4. Repeat steps 2 and 3, if necessary.
5. Repeatedly press EXIT to return to the status report.

Parameter	Description
Language	Language for the display texts.
Date	The current date.
Weekday	The current day of the week.
Time	The current time.
Auto start 1	Time 1 for starting the degassing process.
Auto start 2	See Auto start 1.
Block.time day 1	Time for stopping the degassing process.
Block.time day 2	See Block.time day 1.
Block.time week	Days of the week on which the unit is not working. Selected days are marked with an *. After having changed this parameter, select `Save` using ▲ or ▼. Press ENTER.
Block.time year 1	Period per year during which the unit is not working.
Block.time year 2 - 5	See Block.time year 1.
Max. syst. pressure [1)]	Pressure at which the unit stops and flags an alarm.
Psystem desired[1)]	Pressure at which the refilling stops. Set this as low as possible if the refilling is controlled by a BMS or an external device.
Refill pressure[1)]	Pressure at which the refilling starts. Set this point as low as possible when the refilling is controlled by a BMS or other external device.
Refill alarm[1)]	Maximum allowed refill quantity per refill. Issues an alarm if a refill exceeds this threshold. (0 - 2500 l; 0 = switched off).
Refill alarm after[1)]	Maximum continuous refill time (0 - 255 min.; 0 = switched off).
Max. refill freq.[1)]	Maximum number of times per day that refilling is allowed (0 - 10 times; 0 = switched off).

1) Only for units with the refill functionality.

5.5.2 Manual operation

NOTE
If manually switched off, the process must be manually switched on again.

1. Press MENU. Select `User menu` > `Manual operation` using ▲ and ▼. Press ENTER.
2. Select `Manual operation start` or `Manual operation stop` using ▲ and ▼. Press ENTER.

5.5.3 Filling the installation

Only applicable to units with the refill functionality.

1. Press MENU. Select `User menu` > `Manual operation` using ▲ and ▼. Press ENTER.
2. Select `Manual operation > system fill` using ▲ and ▼. Press ENTER.
3. Select `Degassed` or `Not degassed`. Press ENTER.

NOTE
When desired system pressure is reached, see `Psystem desired` in § 5.5.1. The unit enters the `standby` status and filling stops.

5.5.4 Switch on again

Follow the procedure described below after the unit has been switched off.

1. Set the adjustment valves from position "fully open" in accordance with the table in § 5.4.1.
2. Follow the procedure described in § 5.4.3.

5.5.5 Reading statistics

During operation the following data are stored in the memory:

- Accumulative running hours
- Degassing history
- Fault history
- Refill history if applicable.

The memory can be read in the following way:

1. Press MENU. Select `User menu` > `History` using ▲ and ▼. Press ENTER.
2. Select `Fault history` or `Operation history` using ▲ and ▼. Press ENTER.
3. Select an item using ▲ and ▼. Press ENTER.
4. Repeatedly press EXIT to return to the status report.

5.5.6 Reading data

The following general data has been stored in the memory of the unit:

- Unit type
- Software version
- Installation date
- Common fault
- Trial period

The general data can be read in the following way:

1. Press MENU.
2. Select `User menu` > `General info` using ▲ and ▼. Press ENTER.
3. Select an item using ▲ and ▼. Press ENTER.
4. Repeatedly press EXIT to return to the status report.

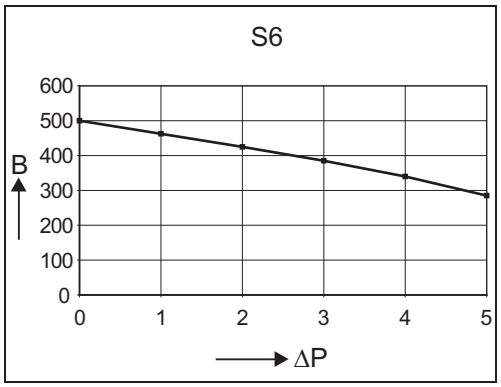
6 USE

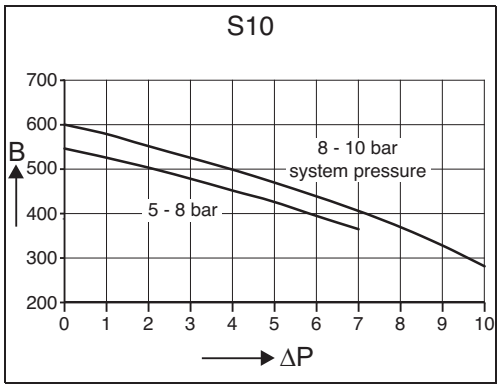
6.1 General

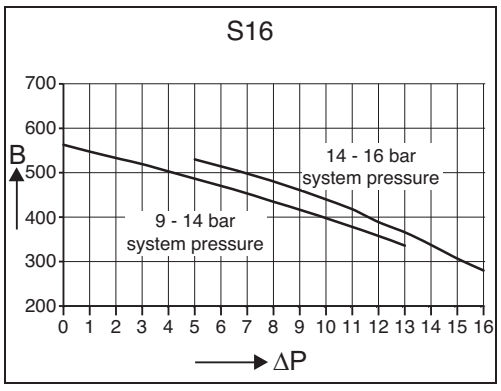
- The display is lit automatically after a key has been pressed.
- The display dims automatically after no key has been pressed for 5 minutes.
- While stopping the process a stop procedure is started, making sure that the unit stops in a safe situation (overpressure).
- When a pump has not run for 96 hours, an automatic pump test is run at the first next `Auto start`.
- Press ON/OFF to switch off the unit. Press ON/OFF again to switch on the unit again.
- At low fluid temperatures condensation may occur at certain parts. The condensation is drained through the openings in the frame. Insulated versions are also available to prevent condensation.

6.2 Refill

Only applicable to units with the refill function.
The amount of fluid that is added (B) depends on the difference (A) between the system pressure and the main water pressure.







ΔP Pressure difference between system and mains water (bar)

B Flow (litres/hour)

6.3 Status reports

Report	Description	LED indication
Auto pump test	The unit runs a pump test.	Green
End degassing End refilling[1)] End systemfill[1)]	The stop procedure is in progress.	Green
Degassing	The unit is degassing.	Green
Process stopped	The unit has been stopped manually.	None
Standby	The unit is waiting for a starting signal.	Green
Stop by BMS	The BMS has stopped the unit. After release by the BMS the status is 'standby'	None
Failure	The unit has stopped because of a failure. Remedy the failure before resetting the unit, see § 7.4. The unit is switched to one of the above statuses.	Red
Refill[1)]	The unit is refilling fluid.	Green
Fill system [1)]	The installation is filled with fluid.	Green

1) Only applicable to units with the refill functionality.

7 FAILURES

7.1 Remedy failures

WARNING

- In case of a failure always warn the installer.
- Remove the power and pressure from the unit before starting repairs. See §7.2 on how to put the unit out of operation.
- Pressing ON/OFF does **not** remove the power from the unit.

WARNING

- There are hot parts under the cover. Let the unit cool down before starting repairs.

NOTE

- In case of a failure the red LED comes on. The display shows the failure report.

NOTE

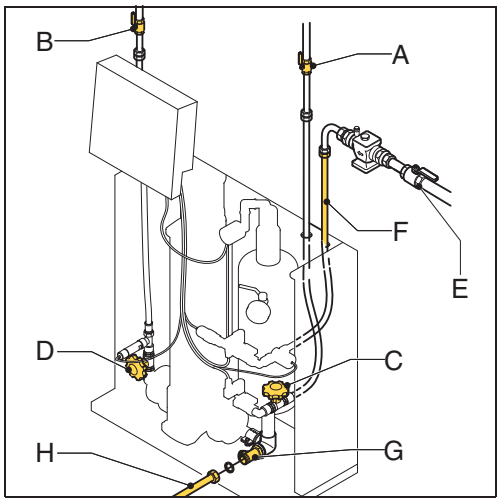
- Only applicable to units with the refill functionality: The seriousness of the failure determines whether the whole unit or a part of the unit switches off. The refill process can remain active when a failure has been detected. In this case both the red and the green LED come on.

1. Use the failure table in §7.3 to localise the cause.
2. If necessary, put the unit out of operation, see §7.2.
3. Remedy the failure.
4. Reset the unit (see §7.4) or put the unit into operation again (see §5.5.4).

7.2 Putting out of operation

WARNING

- Make sure that it is not possible to supply power to the system unintentionally.



1. If the unit is switched on, Press ON/OFF to stop the unit.
2. Take the plug out of the wall socket, if applicable.
3. Close the valves (A) and/or (C) in the inlet line and (B) and/or (D) in the outlet line.
4. Close, if applicable, the valve (E) in the refill supply line (F) as well.
5. Connect a drain line (H) to the drain connection (G).
6. Drain the unit through the drain connection (G).
7. Open the air vent screw on the main pump to completely empty the unit. See the figure in § 5.4.2.

7.3 Failure table

The character indications correspond with the main figures in § 2.1 and § 2.2. An overview of the replacement parts has been included in § 8.2.

General

Problem	Possible cause	Correction
`Err 5 Entrance flow` The flow in the inlet line has been blocked [1].	The solenoid valve (N) in the inlet line does not open.	Replace (a part of) the solenoid valve.
	A valve in the inlet line is closed.	Open the valve.
	The inlet line has been blocked.	Remove the obstruction.
	The pressure switch (S) is defective.	Replace the pressure switch.
	Critical setting adjustment valve inlet (I).	Turn adjustment valve ¼ position up (from fully open).
	Cable to pressure switch (S) disconnected or interrupted.	Replace the cable. Replace the cable lugs.
	The adjustment valve (P) inlet has not been set correctly.	Turn the adjustment valve outlet to the correct position (see § 5.4.1).
`Err 6 Flow` The flow in the outlet line has been blocked [1].	One of the solenoid valves (N) is not closing.	Clean valve internally. If necessary, replace (a part of) the solenoid valve.
	The valve in the outlet line is closed.	Open the valve.
	The outlet line has been blocked.	Remove the obstruction.
	The pump (O) does not run.	Check the pump. Check and replace the pump fuse in the control unit.
	The pressure switch (S) is defective.	Replace the pressure switch.
	The automatic air vent (A) is blocked.	Replace the automatic air vent.
	Pump stopped due to overheating.	Check the seal of the pump. Replace the seal if necessary. Do a check on the thermistor or PTC of the pump. Replace the Thermistor/ PCT pump if necessary.
`Err 7 Fluid lack vessel` There is a risk of running dry, the fluid level in the vessel is at the minimum.	The automatic air vent (A) is defective or blocked.	Replace the automatic air vent.
	The vessel has not been filled.	Fill the vessel (see § 5.5.4).
	The level switch (H) is defective.	Replace the level switch.
	Cable to level pin disconnected or interrupted.	Check the cable and replace if necessary
`Err 8 Pump is too hot` Pump is overloaded.	Pump (O) is blocked or does not run smoothly.	Remove the obstruction.
	Cooling is blocked.	Clear the pump fan.
`Err 9 Pump overloaded` Pump overloaded too often.	Pump (O) is blocked or does not run smoothly.	Remove the obstruction.
	Cooling is blocked.	Clear the pump fan.
`Err 17 Incorrect phase seq.` Voltage was not connected correctly.	Phases were connected in incorrect order.	Restore the correct phase sequence on connector J16.

General

Problem	Possible cause	Correction
`Err 18 Outlet press too high` The flow in the outlet line is blocked.	A valve in the outlet is closed.	Open the valve.
	The outlet line is blocked.	Remove the obstruction.
	Pressure switch (J) is defective.	Replace the pressure switch.
`Err 99 Failure in the control unit.`	Control hardware or software is defective.	Replace the control unit.
The unit runs continuously and does not switch off automatically. The SmartSwitch does not seem to work[1].	The content of dissolved gases has not reached the minimum yet.	Check whether there is a possibility of gases entering.
	The SmartSwitch (R) is defective.	Disconnect the hose on the automatic air vent. Replace the SmartSwitch if the unit does not switch off after 10 minutes.
	The automatic air vent (A) is defective.	Check whether gas is released through the valve. Replace the automatic air vent when no gas is released.
The unit runs maximal 10 min. per degassing period. Gases remain in the installation. The SmartSwitch does not seem to work[1]	The SmartSwitch (R) is defective.	Check whether gas is released through the valve. Replace the SmartSwitch if gas is released.
	The automatic air vent (A) is defective.	Replace the automatic air vent.

1) The refill mode remains active, only applicable to units with the refill functionality.

Only applicable to units with the refill functionality.

Problem	Possible cause	Correction
`Err 1 Psystem too low` The system pressure is below 1 bar (S6), 5 bar (S10), 9 bar (S16).	A failure in the installation.	Provide a system pressure of > 1 bar (S6), > 5 bar (S10), > 9bar (S16)..
	There is a leak in the installation.	Repair the leak.
	The pressure sensor (Q) is defective.	Replace the pressure sensor.
`Err 2 Psystem too high` The system pressure exceeds the set maximum.	A failure in the installation.	Provide a system pressure that is below the set value.
	The set value is too low.	Increase the set value.
	The pressure sensor (Q) is defective.	Replace the pressure sensor.
	A valve in the outlet is closed.	Open the valve.
	The outlet line (T) has been obstructed.	Remove the obstruction.
`Err 10 Refill flow too low` There is no or little supply of refill fluid[1].	A valve in the refill line is (partly) closed.	Open the valve.
	The solenoid valve (N) in the refill line does not open.	Replace (a part of) the solenoid valve.
	The refill line has been blocked.	Remove the obstruction.
	The water flow meter (G) is defective.	Replace the water flow meter.

Only applicable to units with the refill functionality.

Problem	Possible cause	Correction
`Err 11 Refill valve` Undesired supply of refill fluid. The refilling does not stop.	The solenoid valve (N) in the refill line does not close.	Replace (a part of) the solenoid valve.
`Err 13 Refill freq. too high` Refilling takes place too frequently.	There is a leak in the installation.	Repair the leak.
		Check the setting `Max. refill freq.`
`Err 14 Refill time too high` Refilling takes too long.	There is a leak in the installation.	Repair the leak.
		Check the setting `Alarm refill after:`
`Err 15 Refill quantity` Too much is added.	There is a leak in the installation.	Repair the leak.
		Check the setting `Alarm refill.`
The status is degassing, but the system pressure continues to increase.	Inlet system and refilling are switched.	Make sure the connections are correct.
Pressure indicated on display deviates strongly from actual system pressure.	Pressure sensor (Q) is blocked or defective.	Replace the sensor.

1) The refill mode remains active.

7.4 Resetting the unit

1. Press MENU. Select `User menu` > `Manual operation` using ▲ and ▼. Press ENTER.
2. Select `Manual operation reset` using ▲ and ▼. Press ENTER.

8 MAINTENANCE

8.1 Periodic maintenance

1. Annually replace the interior of the solenoid valves (N).
2. Replace the automatic air vent every two years.

NOTE

- Proper and regular maintenance will ensure correct functioning of the unit and maximize the life time expectancy as well as a trouble free operation of the unit and system. Regular analyses of the system fluid will help to take the right measures to maintain the correct fluid quality and consequently system performance.

8.2 Replacement parts (S6)

The character indications comply with the main figure in § 2.1.

Article number	Letter	Description
R60.490	O	Shaft sealing for pump type MVIL / MVI
R60.488	O	Capacitor for pump type MVIL 109 230-50-2
R60.489	O	Capacitor for pump type MVIL 106 230-60-2
R60.390	O	Pump type MVIL 109-16 230-60-2 O01/EC (50 Hz)
R60.391	O	Pump type MVIL 106-16 230-60-2 O01 (60 Hz)
R70.675	W	Cover
12.023	N	Solenoid valve (excluding coil)
12.022	N	Coil for solenoid valve
15.765	N	Interior for solenoid valve
12.021	T	Pressure gauge
R17.889	-	Non-return valve refill
R17.886	A	Automatic air vent
13.468	S	Pressure switch
R18.091A05	U	Control unit (S6A)
R18.091A06	U	Control unit (S6A-R)
R18.091A07	U	Control unit (S6A-R 2P)
R17.888	R	SmartSwitch
15.518	I	Adjustment valve
13.466	H	Level switch
15.519	G	Water flow meter (S6A-R and S6A-R 2P)
15.520	Q	Pressure sensor (S6A-R and S6A-R 2P)
15.521	K	Pump type PSAM70/A (S6A-R 2P) (50 Hz)
15.522	K	Pump type PSAM706/A (S6A-R 2P) (60 Hz)

8.3 Replacement parts (S10 and S16)

The character indications correspond with the main figure in § 2.2.

Article number	Letter	Description
R60.490	O	Shaft sealing for pump type MVIL / MVI
R60.392	O	Pump S10 MVI114-1/25 400-50-2 O29/EC (50 Hz)
R60.394	O	Pump S16 MVI121-1/25 400-50-2 O29 (50 Hz)
R60.393	O	Pump S10 MVI109-1/25 460-60-2 O29 (60 Hz)
R60.395	O	Pump S16 MVI116-1/25 460-60-2 O29 (60 Hz)
R17.733	W	Cover
12.023	N	Solenoid valve (excluding coil)
12.022	N	Coil for solenoid valve
15.765	N	Interior for solenoid valve
13.467	T	Pressure gauge
R17.889	-	Non-return valve refill
R17.886	A	Automatic air vent
R17.748	J	Pressure switch press side S10
R18.047	J	Pressure switch press side S16
13.468	S	Pressure switch
R18.091A01	U	Control unit S10A
R18.091A02	U	Control unit S10A-R
R18.091A03	U	Control unit S16A
R18.091A04	U	Control unit S16A-R
R17.888	R	SmartSwitch
R17.959	I	Adjustment valve inlet
15.518	P	Adjustment valve outlet
13.466	H	Level switch
15.519	G	Water flow meter (S10A-R and S16A-R)
R18.077	Q	Pressure sensor (S10A-R and S16A-R)
R70.149	K	Flow-back limiter

8.4 Maintenance card

Type: _____

Serial number: _____

Installation date: _____

Installed by firm: _____

Installed by technician: _____

Inspection date:	Technician:	Initials:
Nature of the maintenance:		

Inspection date:	Technician:	Initials:
Nature of the maintenance:		

Inspection date:	Technician:	Initials:
Nature of the maintenance:		

Inspection date:	Technician:	Initials:
Nature of the maintenance:		

Inspection date:	Technician:	Initials:
Nature of the maintenance:		

Inspection date:	Technician:	Initials:
Nature of the maintenance:		

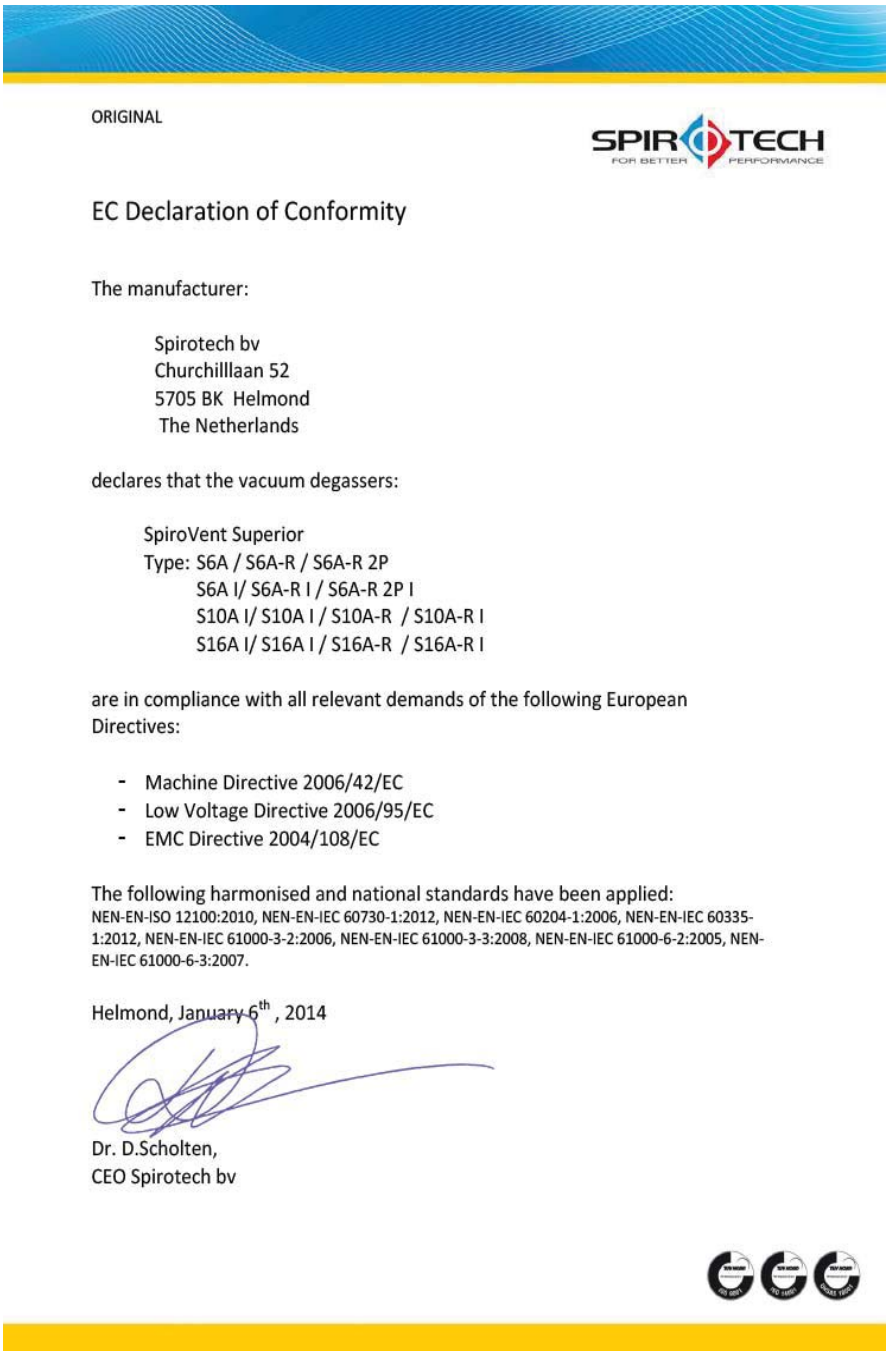
9 GUARANTEE

9.1 Terms of guarantee

- The guarantee for this product is valid until 2 years following the purchasing date.
- The guarantee lapses in cases of faulty installation, incompetent use and/or non-authorised personnel trying to make repairs.
- **Consequential damage** is not covered by the guarantee.
- Normal **tear and wear** is excluded by the guarantee.

10 CE STATEMENT

10.1 Declaration of conformity



ORIGINAL

EC Declaration of Conformity

The manufacturer:

Spirotech bv
Churchilllaan 52
5705 BK Helmond
The Netherlands

declares that the vacuum degassers:

SpiroVent Superior
Type: S6A / S6A-R / S6A-R 2P
S6A I/ S6A-R I / S6A-R 2P I
S10A I/ S10A I / S10A-R / S10A-R I
S16A I/ S16A I / S16A-R / S16A-R I

are in compliance with all relevant demands of the following European Directives:

- Machine Directive 2006/42/EC
- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC

The following harmonised and national standards have been applied:
NEN-EN-ISO 12100:2010, NEN-EN-IEC 60730-1:2012, NEN-EN-IEC 60204-1:2006, NEN-EN-IEC 60335-1:2012, NEN-EN-IEC 61000-3-2:2006, NEN-EN-IEC 61000-3-3:2008, NEN-EN-IEC 61000-6-2:2005, NEN-EN-IEC 61000-6-3:2007.

Helmond, January 6th , 2014

Dr. D.Scholten,
CEO Spirotech bv

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FOR BETTER PERFORMANCE

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